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GB 2020077 A

GB 1549160

GB 1459391

GB 941418

GB 375484

GB 296631

US 3658341 A

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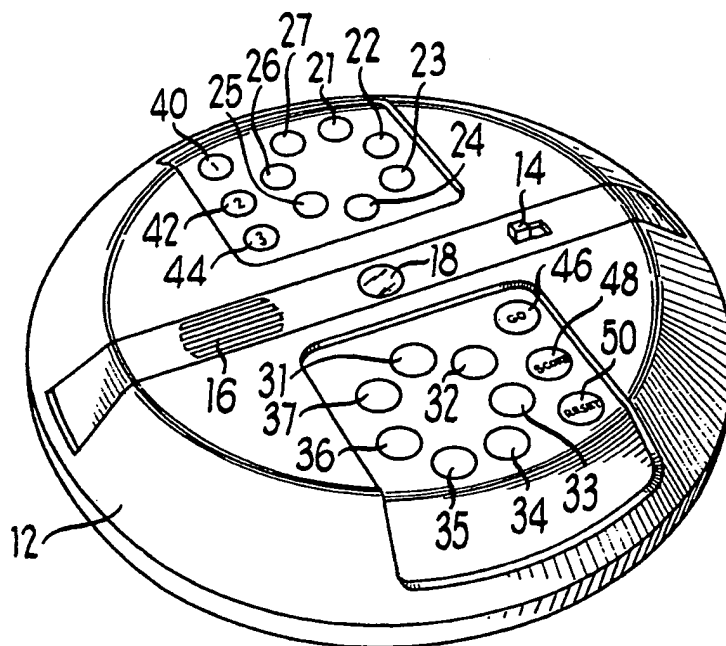
(54) Talking electronic matching  
game

(57) A talking electronic game utilizes an integrated circuit voice synthesizer to generate a random plurality of beginnings of phrases and a plurality of corresponding endings of phrases. The beginnings and endings are assigned at random to a plurality of push buttons, and the object of the game is to match up by appropriate actuation of the various push buttons.

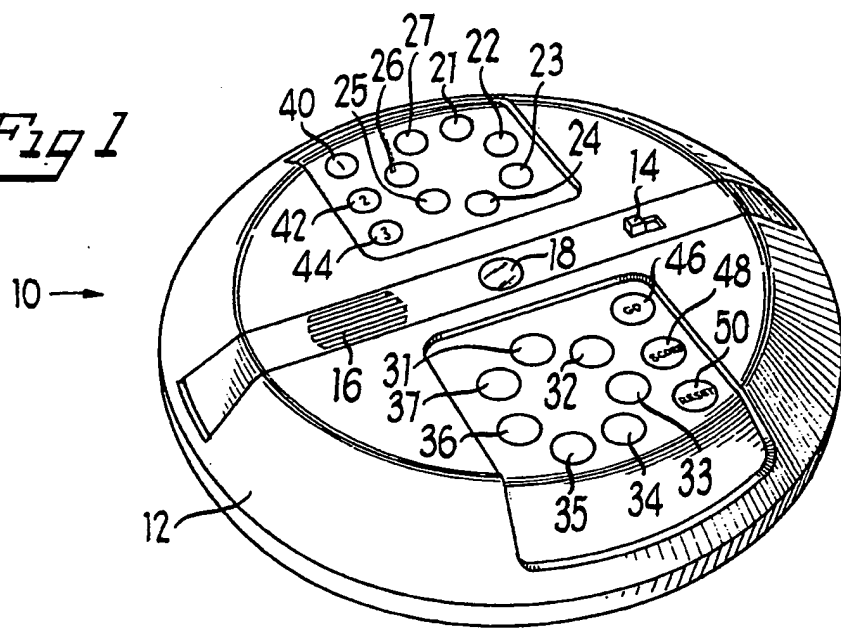
The game includes means to ask the players which of several games they wish to play, whether 1 or 2 are playing, and then announces the complete phrases to be composed. Players are given repeat instructions if they have not responded after a set time. Account is kept of successes and the machine audibly indicates the winner.

*Fig 1*

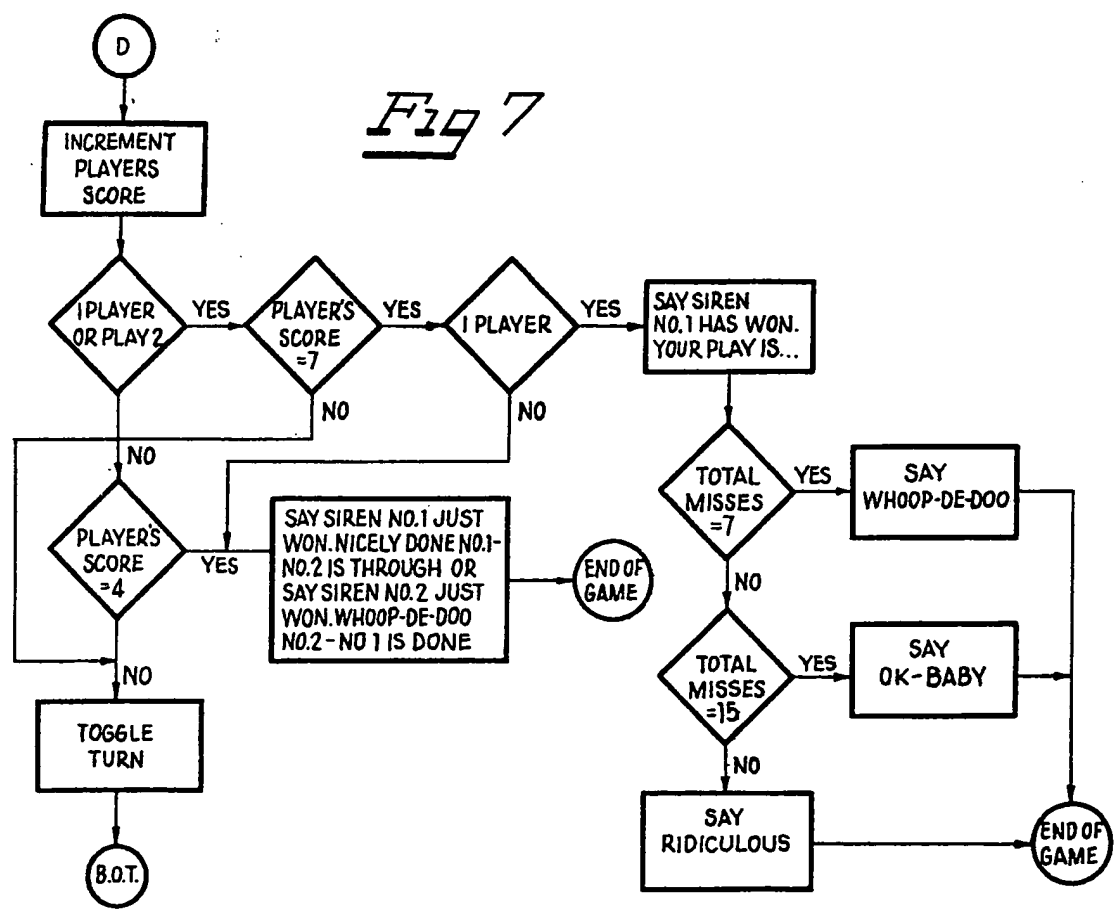
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*Fig 1*



*Fig 7*



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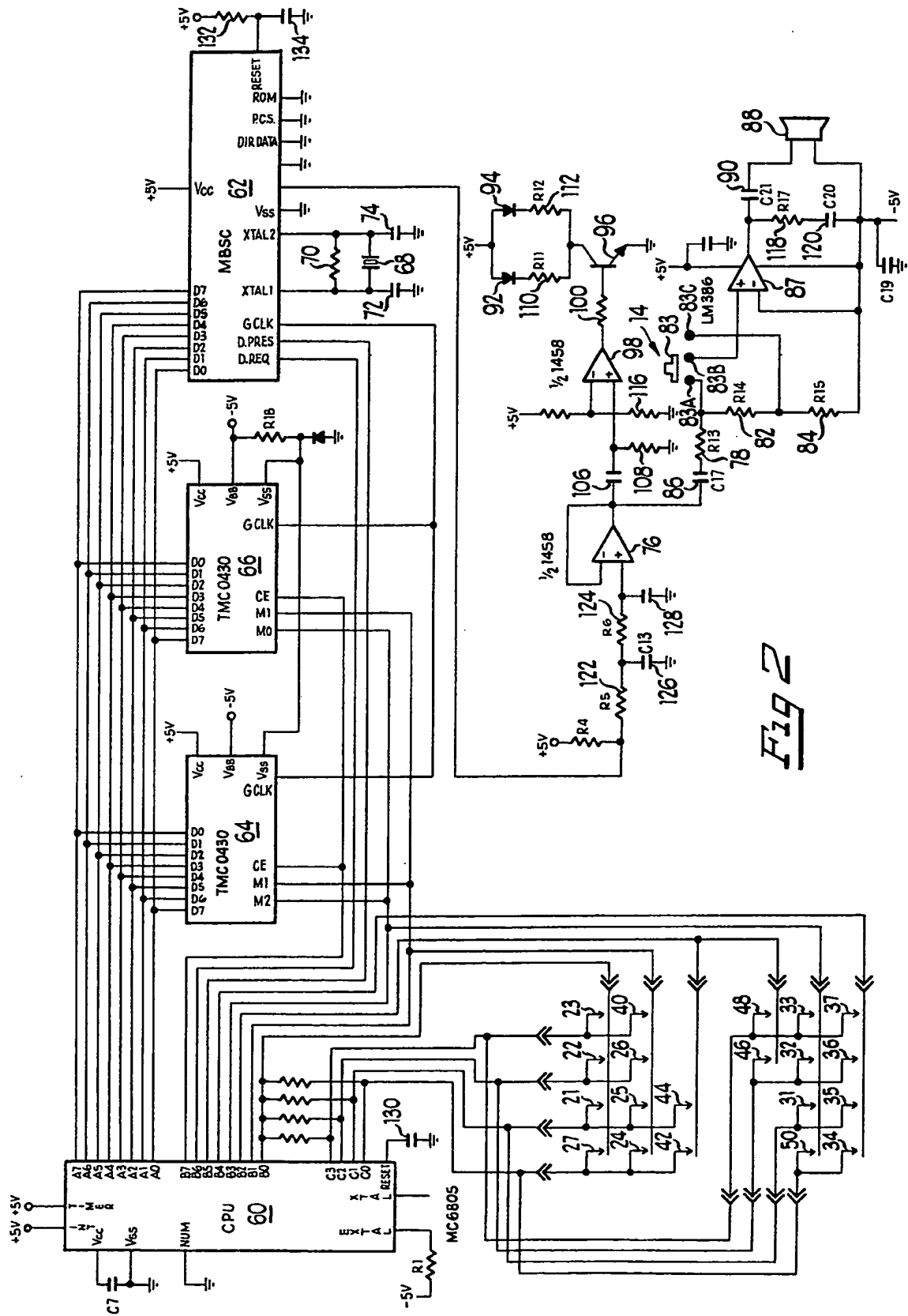
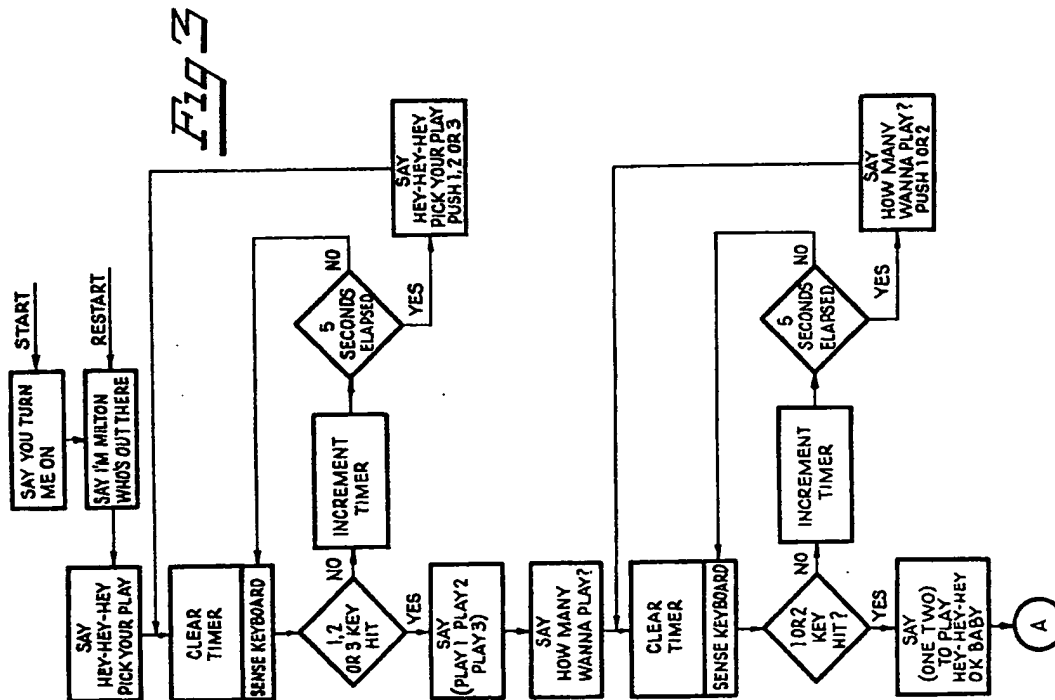
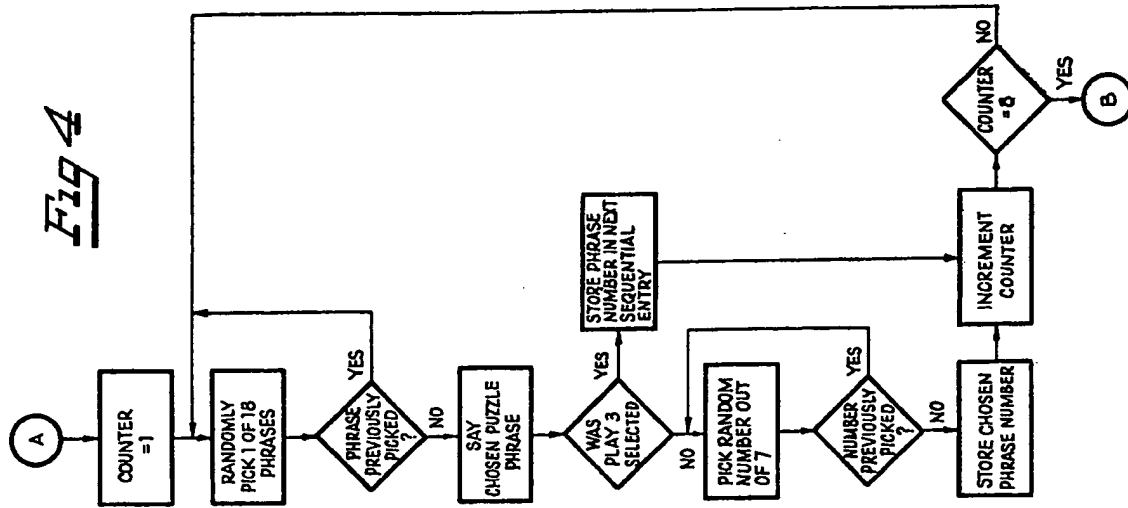
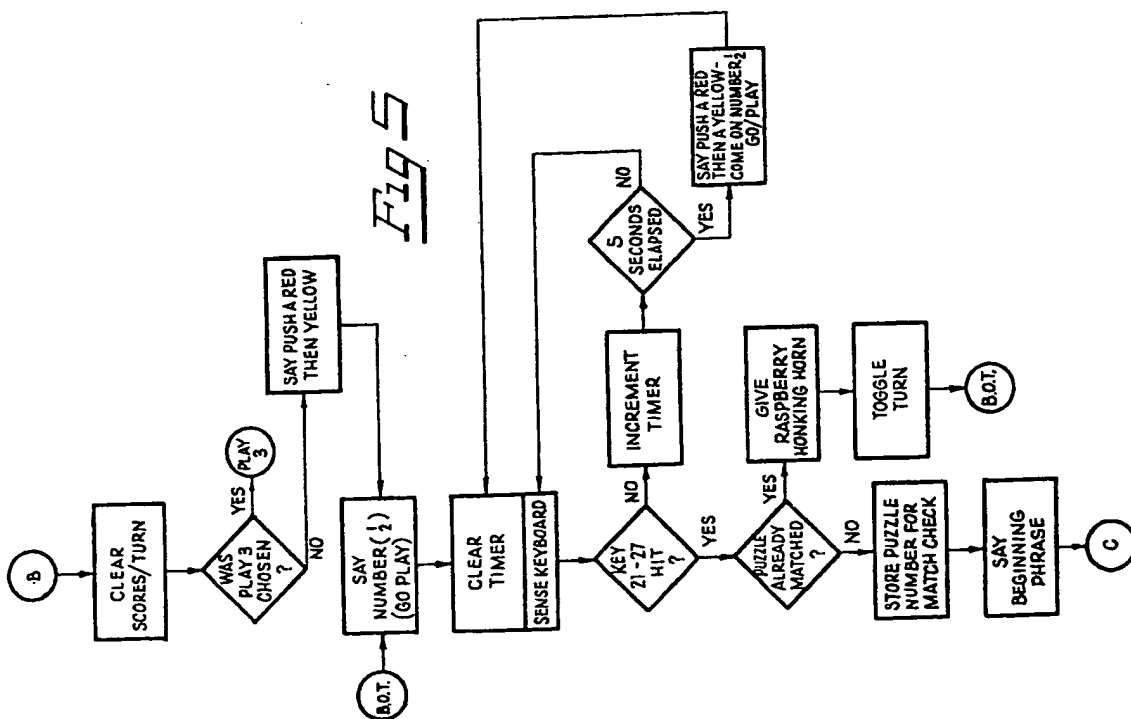
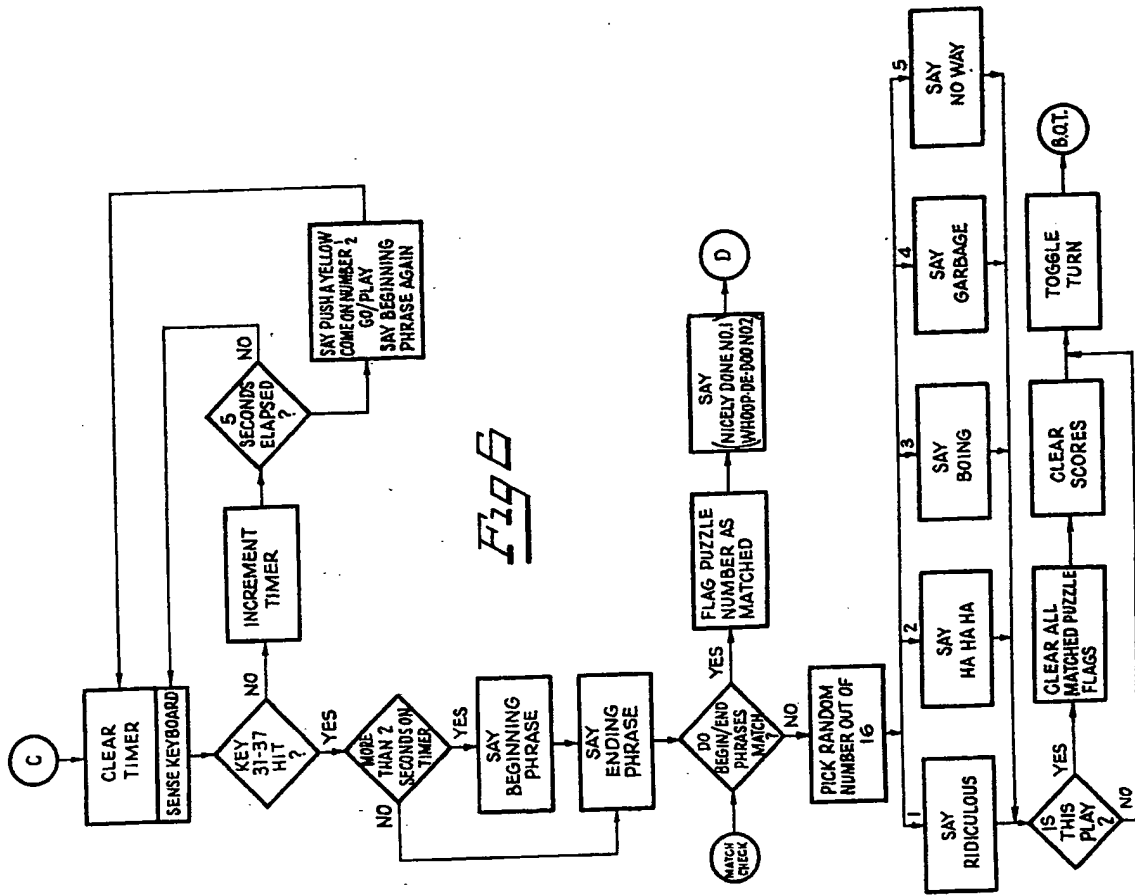


Fig 2

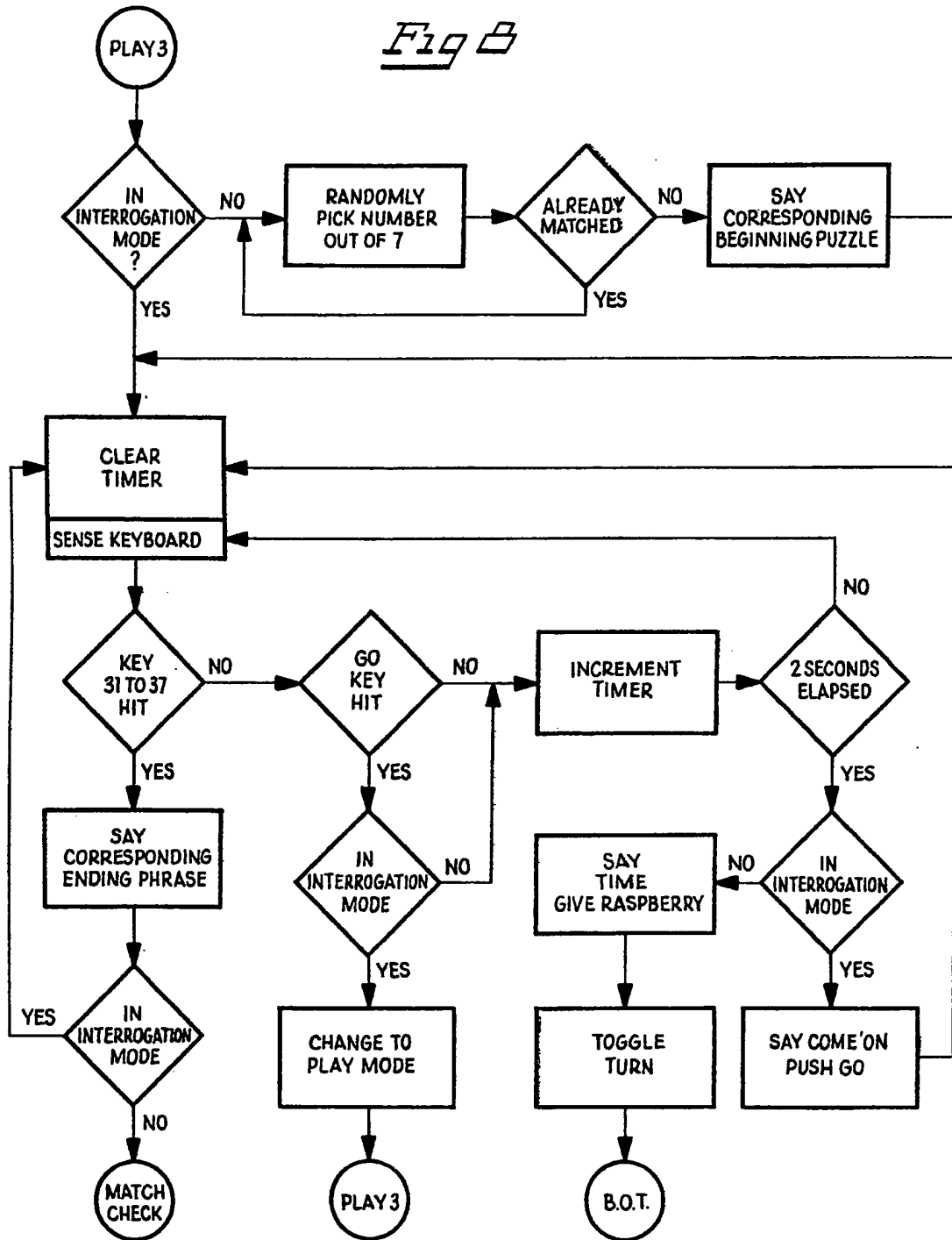


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Fig 6



## SPECIFICATION

## Talking electronic game

5 This invention relates generally to electronic games, and more particularly, to talking electronic games wherein the game generates a voice stimulus and a voice response in response to the actuation of a push button, keyswitch or the like.

10 The invention provides an electronic talking game apparatus, comprising means for generating a plurality of audibly perceptible beginning phrases and a plurality of audibly perceptible ending phrases, each of said ending phrases being associated with a  
15 single one of said beginning phrases, a plurality of manually operable means, each of said manually operable means being associated with a single one of said ending phrases, said generating means being operative to generate the one of said ending phrases associated with each of said manually operable  
20 means upon the actuation thereof, means for rendering said generating means operative to generate one of said beginning phrases, and means responsive to the generation of one of said beginning phrases and the subsequent actuation of one of said manually  
25 operable means for providing a first indication if the actuated manually operable means is associated with the ending phrase that is associated with the generated beginning phrase and for providing a  
30 second indication if the actuated manually operable means is associated with an ending phrase that is not associated with the generated beginning phrase.

In the drawings:

FIGURE 1 is a perspective view of the exterior of  
35 the electronic game according to the invention;  
FIGURE 2 is a schematic diagram of the electronic circuitry of the game according to the invention; and  
FIGURES 3 through 8 are logical flow charts illustrating the operation of the game according to the  
40 invention.

Referring now to the drawings, with particular attention to FIGURE 1, there is shown a preferred embodiment of the game according to the invention, generally designated by the reference numeral 10.

45 The game includes a housing 12 on which is mounted an off/on-loud/on-soft switch 14, a loud-speaker (not shown in FIGURE 1) mounted beneath a grille 16 and a lens 18 disposed over a light source (not shown) mounted within the housing 12. In addition, two sets of playing push buttons 21-27 and  
50 31-37 are disposed on the housing 12 and are manually operable by one or more players to permit the game to be played. The push buttons 21-27 and 31-37 may be different colors, for example, 21-27  
55 may be red and 31-37 may be yellow, to identify them as beginning and ending phrase push buttons. Three game selector push button switches 40, 42 and 44, which may be labelled 1, 2 and 3, permit one of three different games to be selected. A go switch  
60 46 serves to initiate play for Game 3, a score switch 48 is depressed to indicate the player's scores, and a reset switch 50 is used to reset the device to permit a new game to be played.

In operation, when the device is turned on via the  
65 power on/off switch 14, the device makes some

introductory remarks and then queries the player as to which game he wishes to play by means of an oral statement from the loudspeaker beneath the grille 16 such as "Hey, hey, hey, pick your play". The player  
70 then responds by pressing one of the game selector push buttons 40, 42 and 44 to pick Game 1, 2 or 3. The device responds by indicating the game choice audibly by means of a statement such as "Play 1". The device then issues an audible statement request-  
75 ing the player to indicate how many players are going to participate in the game by means of an audible statement such as "How many wanna play?" to which the player responds by pressing one of the push buttons 40 or 42 to indicate whether one or two  
80 players are going to play. The device confirms this choice by means of an audible statement such as "Two (or one) to play, hey, hey, hey".

After the game to be played has been chosen and a number of players indicated, the device assigns at  
85 random seven beginning phrases to the seven push-button keyswitches 21-27 of the first group of keyswitches, and assigns at random seven ending phrases to the other seven push-button keyswitches 31-37. The device then audibly announces the seven  
90 game sentences or sayings, and the game begins, with the player or players trying to match the beginning and ending phrases by means of appropriate actuation of the push buttons 21-27 and 31-37.

Several modes of play are possible, with the following games being representative of the types of games that can be selected by the three game selector push buttons 40, 42 and 44. The following playing sequences are possible:

*GAME 1—One Player Version*

100 1. The device randomly assigns the seven beginning and seven ending phrases to the fourteen playing keys 21-27 and 31-37, respectively.

2. The player depresses one of the push buttons 21-27 to select a beginning phrase.

105 3. The player then depresses one of the push buttons 31-37 in an attempt to select an ending phrase that matches the previously selected beginning phrase.

4. The player continues to depress one of the keys 21-27 and a corresponding one of the keys 31-37 until the seven beginning phrases are matched with the seven ending phrases.

5. The device keeps score by counting the number of correct matches. The device also counts the number of incorrect matches or misses. The object of the game is to match all seven complete phrases with the fewest number of errors. The number of correct matches at any point in the play may be determined by depressing the score push button 48.

120 6. The reset button 50 may be depressed at any time the keyboard is being read to start the game over again.

*GAME 1—Two Player Version*

The two player version is similar to the one player version except that two players alternate turns in depressing one of the push buttons 21-27 and one of the push buttons 31-37 in an attempt to match the beginning and ending phrases. The first player to match four of the seven pairs of beginning and ending phrases is the winner.  
130

### GAME 2 — One Player Version

The one player version of Game 2 is identical to the one player version of Game 1 with the object being to match all seven pairs of beginning and ending phrases during one turn in the fewest number of attempts.

### GAME 2 — Two Player Version

In the two player version of Game 2, the object is to be the first player to match all seven pairs of beginning and ending phrases during a single turn. An incorrect match is an end of turn for the player making the error, and brings up the other player.

### GAME 3 — One Player Version

The device selects seven complete phrases which are spoken by the device and assigned sequentially to keys 31, 32, 37. After the phrases are spoken, all of the push buttons 31-37 corresponding to the ending phrases may be depressed by the player and the correspondence between the ending phrases and the push buttons memorized. When the go button 46 is depressed, the device randomly says one of the seven selected beginning phrases, and the player must depress one of the push buttons 31-37 corresponding to the matching ending phrase as each beginning phrase is enunciated. The object of the game is to match all seven phrase pairs in the fewest number of tries.

### GAME 3 — Two Player Version

The two player version is similar to the one player version except that two players alternate turns in depressing one of the push buttons 31-37 in an attempt to match the beginning phrase spoken by the device. The object of the game is to be the first player to get four of the seven phrase pairs matched.

The device 10 utilizes integrated digital circuitry to provide the game playing logic and to generate the voice commands. In the present embodiment, the device 10 includes a central processing unit or microprocessor 60 (FIGURE 2) such as, for example, an MC6805 microcomputer manufactured by Motorola, Inc., 1303 East Algonquin Road, Schaumburg, Illinois 60196, United States of America, to control the various logical operations of the device 10. A speech integrated circuit 62 is provided such as, for example, an integrated circuit manufactured by General Instruments Corp., 600 West John Street, Hicksville, New York 11802, United States of America. The speech synthesizer 62 is used to synthesize the voice signals produced by the device 10. The game playing rules (outlined in flow chart form in FIGURES 3-8) are stored in the memory portion of the microprocessor 60. The location and speech or sound generating data are stored in the two read-only memories 64 and 66 (FIGURE 2b). In the preferred embodiment, these ROMs are TMC430 I.C. manufactured by Texas Instruments Corp., P.O. Box 5012, Dallas, Texas 75222, United States of America. All of the information or data required by the speech chip 62 to generate the voice signals is permanently stored in the ROMs 64 and 66.

Both of the ROMs include the direction or address information identifying the location of the speech data within the ROM. In operation, the central processing unit 60 retrieves the necessary data and temporarily accumulates the data within its own

memory. This data is stored in eight-bit bytes until 15 of such bytes are accumulated. The 120-pit package is inputted through the D0/D7 inputs of the speech integrated circuit 62 where the information is again temporarily stored and compiled.

The various game playing keyswitches 21-27 and 31-37 as well as the game selection switches 40, 42 and 44, and the function switches 46, 48 and 50 are coupled to the microprocessor chip 60 to control the operation of the microprocessor 60 and to provide inputs thereto. A piezoelectric crystal 68 and associated components including a resistor 70 and a pair of capacitors 72 and 74 provide a clock for the speech chip 62 to maintain precise operating frequency thereof. The speech wave form of voice signal from the D/A output of the chip 62 is integrated by the passive filter network comprised of resistors 122 and 124 and capacitors 126 and 128. This integrated voice signal is buffered by operational amplifier 76 which is coupled via the resistance/capacitance network including resistors 78, 82 and 84, and a capacitor 86 through switch 14 to another operational amplifier 87 which couples the voice signal to a loudspeaker 88 located under the grille 16 of FIGURE 1 via a capacitor 90. The loudspeaker 88 thus provides an audible signal to the participant.

A volume control switch, generally designated 14, includes a manually movable switch element 83. The volume control switch 14 provides a volume off position, a medium volume position and a high volume position by connecting the appropriate contacts 83a, 83b and 83c.

A visual signal that operates at the syllabic rate of the voice signal is generated by a pair of light emitting diodes 92 and 94 located under the lens 18 of FIGURE 1. The light emitting diodes 92 and 94 are driven by a transistor 96, which is in turn driven by an operational amplifier 98 and coupled thereto via a resistor 100. The amplifier 98 is coupled to the amplifier 76 via a network including a capacitor 106 and a resistor 108. Resistors 110 and 112 serve as current limiting resistors to the diodes 92 and 94, and resistors 114 and 116 form a bias voltage setting for the OP-AMP 98. The resistance/capacitance network comprising resistors 122 and 124 (FIGURE 2) and capacitors 126 and 128 form an integrating network for integrating the D/A output of the speech IC chip 62 to smooth out the voice signal generated by the speech chip 62. The capacitor 130 couples to the RESET input of the microprocessor 60 and the resistance/capacitance network including resistor 132 and capacitor 134 coupled to the RESET input of the voice chip 62 serve to reset the aforesaid chips when power is turned on. Other capacitors associated with the 5 volt power supply serve as filter capacitors.

The program or game play instructions stored in the memory of the CPU 60 are illustrated in flow chart form in FIGURES 3-8, with the initialization routine being illustrated in FIGURES 3 and 4. Referring now to FIGURE 3, when the off/on switch is switched on, the start sequence is initiated thereby causing the device to generate a voice message such as "Hey, hey, hey, pick your play", asking the player to select one of the Games 1-3. After the voice message is generated, a timer is cleared and causes the machine



to sense the keyboard. The device then waits to see whether any of the push buttons 40, 42 or 44 corresponding to Games 1, 2 and 3, respectively, are depressed. As long as no key is depressed, a timer is incremented, and if five seconds elapse, the previously generated voice message is repeated with the additional phrase, Push 1, 2 or 3.

After one of the push buttons 40, 42 and 44 has been depressed, the machine then states the number of the game selected by saying "Play 1", "Play 2" or "Play 3". Subsequently, the voice sequence "How many wanna play?" is generated, the timer is again cleared and the keyboard sensed again to permit the player to enter the number of players that are going to play. During the keyboard sensing interval, the timer is incremented again, and if five seconds elapse, the previous voice message is again repeated followed by the voice message "Push 1 or 2". When one of the push buttons 40 or 42 corresponding to one or two players is pushed, a voice message indicating the number of participants that are going to play, such as, for example "One (or two) to play, hey, hey, hey" is generated.

In the previously described sequence of FIGURE 3, the game selected and the number of players playing are established. Once this has been done, seven complete phrases including seven beginning and seven ending phrases are picked at random according to the logic sequence illustrated at FIGURE 4. In the present embodiment, the seven complete phrases are chosen by first setting a counter to one and randomly picking one out of eighteen complete phrases. If one of the complete phrases chosen in this manner has been previously picked, another phrase is randomly selected, but if it had not been previously picked, a voice message enunciating the complete phrase is generated. If, during the sequence of FIGURE 3, Game 3 had been selected, a push button number would be assigned to each chosen phrase in sequence, that is, each of the seven complete ending phrases would be assigned a push button from 31 to 37 (see FIGURE 1) in the sequence in which they were chosen. If Game 3 were not selected, each complete phrase would be assigned a number ranging from one to seven picked at random. In the event that a random assignment of phrase numbers is made, a check is initiated to make sure that no two complete phrases are assigned the same number. Afterward, the phrase numbers associated with each phrase are stored, and a counter is incremented. As long as the count in the counter remains below eight, the process of randomly choosing phrases continues until the counter is set to eight, indicating that all seven complete phrases have been chosen.

After the seven complete phrases have been chosen, game play is initiated. This is accomplished by clearing the score and turn counter (FIGURE 5) and determining whether Game 3 was chosen. If Game 3 were chosen, then game play would be controlled in a manner illustrated by the flow chart shown in FIGURE 8, which will be discussed in a subsequent portion of the detailed description. If not, a voice signal is synthesized to prompt correct play "Push a red then a yellow" and then to indicate to the player

whose turn it is to play by means of a voice message such as "Number 1 (or 2), go play". An elapsed time timer is then cleared and the device rendered operative to sense whether any one of the keys 21-27 is actuated. During the keyboard sensing time, a timer is continuously incremented until five seconds have elapsed. If no key has been hit during the five second elapsed time interval, the device generates a voice signal instructing the player how to play, for example, the machine might instruct the player to "Push a red, then a yellow - come on number 1 (or number 2), go (or play)", referring to the color of the push buttons 21-27 and 31-37. The elapsed time timer is then cleared, and the player is given another five seconds to respond.

If the player hits one of the keys 21-27 within the five seconds allotted, a determination is made to check whether or not that key corresponded to a complete phrase that had already been matched. If the key depressed corresponds to a complete phrase that has already been matched, a "honking horn" or "raspberry" tone is generated and the player's turn is terminated with the device then generating a voice message instructing the other player to play with a message such as "Number 2 (or 1), go (or play)". If the key depressed does not correspond to the beginning of a complete phrase that had already been matched, then the phrase number corresponding to the key depressed is stored and the beginning phrase is enunciated by the device.

After the beginning phrase is enunciated, the elapsed time timer is again cleared (FIGURE 6) and the keyboard is sensed to determine whether any of the push buttons 31-37 are depressed within the five second period. If not, a voice message instructing the player to select one of the push buttons 31-37 is given, for example, "Push a yellow (relating to the color of the push buttons 31-37), come on Number 1 (or 2), go (or play)", and the elapsed time timer is again cleared. If one of the push buttons 31-37 is hit during the first five second interval or during a subsequent five second interval, the device determines the elapsed time accumulated on the timer at the time that one of the push buttons 31-37 is actuated. If no more than two seconds are on the timer, the ending phrase corresponding to the actuated push button is generated by the device. If more than two seconds are on the timer, the beginning phrase is again repeated followed by the ending phrase. A check between the numbers assigned to the beginning phrase and the selected ending phrase is made in order to determine whether the beginning and ending phrases match. If they do not, a number from one to sixteen corresponding to one of sixteen embarrassing messages is picked, and the embarrassing message corresponding to that number is enunciated. Typical embarrassing messages may be, for example, "Ridiculous", "Ha, ha, ha" or "No way" or a boing sound followed by "Garbage!". A determination is then made to determine whether Game 1 or Game 2 had been selected. If Game 1 had been selected, the participating player's turn is ended, and the other player is advised to play. If Game 2 had been selected, the participating player's turn is also ended, but prior to ending the participat-

ing player's turn, all scores and flags indicating matches are cleared. If the beginning and ending phrases match, the particular complete phrase is flagged as being matched, and a voice message  
5 indicating a correct response, such as "Nicely done, Number 1" or "Whoop-de-doo, Number 2" is generated.

After the voice message is generated, the participant's score is incremented (FIGURE 7), and a determination is made to determine whether a single  
10 player is playing or whether Game 2 is being played. If either condition is true, the score is noted in order to determine whether a score of seven has been reached. If a score of seven exists and if this is a two  
15 player game, a siren sound is issued and a voice statement such as "Number 1 just won, Nicely done, Number 1" is issued to indicate a winner. A voice signal such as "Number 1 is done", or "Number 2 is through" is issued and then the game is ended. If the  
20 score has not yet reached seven, another round of play is started. If a score of seven exists and if this is a one player game, a siren sound is issued and the voice statement "Number 1 has won—your play is . . ."  
25 is issued. The game completes the above statement with one of the following three phases, "whoop-de-doo", "okay baby" or "ridiculous". As the game is being played, the device counts the number of mismatches as well as previously  
30 matched beginning phrases depressed. This number, total misses, is examined. If it is seven or less, then a "whoop-de-doo" is issued, if eight to fifteen, then "okay baby", if any higher score, "ridiculous".

If the game selected is not Game 2, and if more  
35 than one player is playing, after the player's score is incremented, a check is made to determine whether the player's score has reached four. If it has, the previously described win indicating and game ending sequence is generated. If the player's score has not  
40 yet reached four, his turn is over and the other player takes his turn.

If, in the logic step illustrated in FIGURE 5, it were determined that Game 3 had been selected, the control of the game would be controlled in a manner  
45 illustrated in FIGURE 3. There are two modes to Game 3, the interrogation mode and a play mode. The interrogation mode precedes the play mode and exists up until the moment the go key (push button 46) is depressed. During the interrogation mode an  
50 elapsed time timer is cleared, and the device senses whether any of the push buttons 31-37 are actuated. If one of the keys 31-37 is depressed, the corresponding ending phrase is enunciated and the timer is cleared. This permits the keyboard to be sensed  
55 again, thus permitting the player to experiment pressing various keys in an attempt to memorize the ending phrases associated with each of the keys 31-37. As soon as the go key is depressed, the device enters Game 3 play mode.

If the go key were not depressed, the elapsed timer would be incremented. After an elapsed time of two  
60 seconds, the device would instruct the player "Come on, push go" and clear the elapsed time timer to give the player another two seconds either to actuate one  
65 of the key switches or to depress the go key. Once in

play mode the device controls the play in the following manner. A random number from 1 to 7 is selected. If the phrase corresponding to this number has been matched, another random number is chosen.  
70 The beginning phrase corresponding to this number is pronounced and the player has two seconds to push the correct ending phrase. If he fails to push a key from 31-37, the device yells "TIME!" and issues the raspberry. Otherwise, the standard match  
75 check is performed and pass/reward issued according to whether a mismatch/match has been made. Play alternates between the participating players.

In addition to the above, at any time during which the keyboard is being read, the reset key 50 is  
80 enabled. Pushing of the key recycles the play to the restart label in FIGURE 3, i.e., Milton says "I'm Milton—who's out there; hee, hee, hee." This, of course, restarts the entire sequence. At the end of a game the timer is cleared and the keyboard is again scanned.  
85 Any key depressed at this time recycles play to the restart label in FIGURE 3 per the restart key 50 above. At the end of a game, after five seconds with no key depressions, play is automatically recycled to the restart position.

#### 90 CLAIMS

1. An electronic talking game apparatus, comprising means for generating a plurality of audibly perceptible beginning phrases and a plurality of audibly perceptible ending phrases, each of said ending  
95 phrases being associated with a single one of said beginning phrases, a plurality of manually operable means, each of said manually operable means being associated with a single one of said ending phrases, said generating means being operative to generate  
100 the one of said ending phrases associated with each of said manually operable means upon the actuation thereof, means for rendering said generating means operative to generate one of said beginning phrases, and means responsive to the generation of one of  
105 said beginning phrases and the subsequent actuation of one of said manually operable means for providing a first indication if the actuated manually operable means is associated with the ending phrase that is associated with the generated beginning phrase and for providing a second indication if  
110 the actuated manually operable means is associated with an ending phrase that is not associated with the generated beginning phrase.

2. The game apparatus of claim 1, including  
115 means responsive to said second indication for generating an audible error signal.

3. The game apparatus of claim 2, wherein said means responsive to said second indication for generating an error signal includes means for  
120 generating an audibly perceptible phrase.

4. The game apparatus of claim 1, including means responsive to said first indication for generating a win signal.

5. The game apparatus of claim 4, wherein said  
125 means responsive to said first indication for generating a win signal includes means for generating an audibly perceptible phrase.

6. The game apparatus of claim 1 or 5, wherein said plurality of manually operable means includes  
130 switch means connected to said means for rendering

said generating means operative to generate one of said phrases in response to actuation thereof.

7. A microprocessor controlled electronic talking game apparatus, comprising a housing, speech synthesizing means mounted within said housing for generating a plurality of audibly perceptible beginning phrases and a plurality of audibly perceptible ending phrases, each of said ending phrases being associated with a single one of said beginning phrases, a plurality of manually operable switch means mounted on said housing and operable by a player of the game, each one of said switch means being associated with a single one of said phrases, means for rendering said speech synthesizing means operative to generate one of said beginning phrases, and means responsive to the generation of one of said phrases and the actuation of one of said plurality of switch means for providing a first indication if the actuated switch means is associated with the ending phrase associated with the generated beginning phrase.

8. The game apparatus of claim 7, including means for providing a second indication if the actuated switch means is associated with an ending phrase not associated with the generated beginning phrase.

9. The game apparatus of claim 7 or 8, including means responsive to said first and second indication for generating at least one audibly perceptible word subsequent to said first or second indication.

10. The game apparatus of claim 9, wherein said speech synthesizing means includes a first integrated circuit means for storing a plurality of representative sound components and second integrated circuit means, connected to said first integrated circuit means for selectively retrieving and combining said stored elements to provide an output signal capable of driving a transducer to provide said audibly perceptible phrase.

11. The game apparatus of claim 10, wherein said speech synthesizing means further includes a central processing unit connected to said first integrated circuit means and said second integrated circuit means for selectively retrieving a plurality of representative sound components from said first integrated circuit means, for temporarily storing said sound components until a predetermined number thereof have been aggregated, and outputting said predetermined number of representative sound components to said second integrated circuit means.

12. The game apparatus of claim 11, including transducing means connected to the output of said second integrated circuit means for producing a recognizable audible signal in response to the sound components received from said second integrated circuit means.

13. The game apparatus of claim 12, including second transducing means for producing a visible signal, said second transducing means being connected to the output of said second integrated circuit for producing a visual signal in proportion to the amplitudes of said wave form signal.

14. An electronic talking game substantially as described herein with particular reference to FIG-  
URES 1-8 of the accompanying drawings.

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